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SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER	
MCCARTNEY, LINZY T	
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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

TS

Office Action Summary	Application No. 09/852,126	Applicant(s) DOAK ET AL.
	Examiner Linzy McCartney	Art Unit 2671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-113* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-61 and 63-113* is/are rejected.

7)☐ Claim(s) *62* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claim 62 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim must only refer to preceding claims. See MPEP § 608.01(n). Accordingly, the claim 62 has not been further treated on the merits.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 7-9, 11, 13, 14, 16, 17, 20, 21, 99, 100, 104, 105, 114 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,362,817 to Powers et al (Powers) in view of Foley et al., "Computer Graphics: Principles and Practice" (Foley) further in view of U.S. Patent No. 6,414,679 to Miodonski et al. (Miodonski).

a. Referring to claim 1, Powers discloses reading map data from a data store, the map data comprising component identifying data and component position data for at least one of said components (column 27, lines 14-19; column 6, lines 5-7; Fig. 3B) and reading component data for the at least one identified component from a data store, the component data including at least 3D geometry data for the component (column 27, lines 14-19; column 19; lines 63-67; column 20, lines 61-64; column 21, line 10 – column 22,

line 45). Powers does not explicitly disclose transforming the 3D geometry data of the at least one component using said component position data to provide 3D virtual environment data defining a substantially contiguous 3D surface enclosing said 3D virtual environment. Foley discloses transforming 3D geometry data of at least one component using said component position data (page 280, paragraphs 1 and 2; Fig. 6.59). Miodonski discloses 3D virtual environment data defining a substantially contiguous 3D surface enclosing said 3D virtual environment (Fig. 17; column 16, line 66 – column 17, line 7). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the method of Powers by transforming 3D geometry data and defining a surface enclosing the 3D environment as taught by Foley and Miodonski. The suggestion/motivation for doing so would have been because it is natural to define an object in it own coordinate system and then transform it to a new world-coordinate system (Foley, page 223, paragraph 3) and because large, unbounded 3D environments are difficult to navigate (Miodonski, column 1, lines 55-61).

b. Referring to claim 2, Powers discloses reading and combining data for said plurality of components to provide said 3D virtual environment data (column 27, lines 14-19; column 28, lines 7-9; Fig. 4A). Powers does not explicitly disclose transforming 3D geometry data. Foley discloses transforming 3D geometry data (page 280, paragraphs 1 and 2; Fig. 6.59).

c. Referring to claim 7, Powers discloses 3D geometry data (column 21, line 10 – column 22, line 45). Powers does not explicitly disclose wherein said plurality of components comprises data for generating visible surface portions of said contiguous 3D

surface enclosing said 3D virtual environment. Miodonski discloses wherein plurality of components comprises data for generating visible surface portions of said contiguous 3D surface enclosing said 3D virtual environment (Fig. 17; column 16, line 47 – 49).

d. Referring to claim 8, Powers discloses combining game operation-related data for components identified in the map data to operationally link parts of the 3D virtual environment derived from different components (column 4, lines 7-10; column 25, line 59 – column 26, line 9).

e. Referring to claim 9, Foley discloses transforming data using position data (page 280, paragraphs 1 and 2; Fig. 6.59).

f. Referring to claim 11, Powers discloses wherein said game operation-related data includes navigation data defining a plurality of linked positions and defining links between position in parts of the 3D virtual environment derived from different components (column 4, lines 7-10; column 25, line 59 – column 26, line 9).

d. Referring to claim 13, Powers discloses reading component set data identifying a said set of 3D components for use in generating said 3D virtual environment data (column 27, lines 14-19; Fig. 5).

e. Referring to claim 14, Powers discloses reading map data from a data store, the map data comprising component set data identifying a said set of 3D components for use in generating said 3D virtual environment data, component identifying data and component position data for said 3D components (column 27, lines 14-19 and 42-46; column 6, lines 5-7; column 19; lines 63-67; column 20, lines 61-64; Fig. 3B); reading from a data store component data for the identified components from the identified set,

the component data including at least 3D geometry data for the components (column 27, lines 14-19 and 42-46; column 6, lines 5-7; column 21, line 10 – column 22, line 45); and combining the data to provide 3D virtual environment data for said 3D virtual environment (column 28, lines 7-9). Powers does not explicitly disclose transforming the 3D geometry data using said component position data. Foley discloses transforming the 3D geometry data using said component position data (page 280, paragraphs 1 and 2; Fig. 6.59).

f. Claim 16 is rejected with the rationale of the rejection of claim 1. Claim 16 recites the additional limitations of a data memory storing component data and operable to store map data; and instruction memory storing processor implementable instructions and a processor operable to read and process data from the data memory. Powers discloses the aforementioned limitations (Figs. 1 and 2; column 8, line 56- column 9, line 9).

g. Claim 17 is rejected with the rationale of the rejection of claim 2.

h. Referring to claim 20, Powers discloses wherein the 3D geometry data comprises data for generating visible 3D geometry of the 3D virtual environment (column 27, lines 14-19; column 28, lines 7-9; Fig. 4A) and wherein the component data included additional game operation-related data for defining an operational aspect of the game (column 4, lines 7-10; column 25, line 59 – column 26, line 9); and wherein the stored instructions further comprise instructions for controlling the processor to combine the game-operation related data for components identified in the map data to operationally link parts of the 3D environment derived from different components (column 4, lines 7-10; column 25, line 59 – column 26, line 9).

i. Claim 21 is rejected with the rationale of the rejection of claim 14. Claim 21 recites the additional limitations of a data memory storing map data; instruction memory storing processor implementable instructions; a processor operable to read and process data from the data memory. Powers discloses the aforementioned limitations (Figs. 1 and 2; column 8, line 56- column 9, line 9).

j. Claim 99 is rejected with the rationale of the rejection of claim 1.

k. Claim 100 is rejected with the rationale of the rejection of claim 2.

l. Claim 104 is rejected with the rationale of the rejection of claim 7.

m. Claim 105 is rejected with the rationale of the rejection of claim 8.

n. Claim 113 is rejected with the rationale of claim 99. Miodonski discloses a computer readable medium (column 34, lines 49-54).

3. Claims 3-6, 15, 18, 19, 22, 101-103 rejected under 35 U.S.C. 103(a) as being unpatentable over Powers in view of Foley further in view of Miodonski as applied to claims 1, 2, 16 and 99 further in view of U.S. Patent No. 6,646,641 to White et al. (White)

a. Referring to claim 3, Powers does not explicitly disclose reading the non-interfaced version of the geometry data for the interface portion of a component where the component is joined to another component at the interface portion. White discloses reading the non-interfaced version of the geometry data for the interface portion of a component where the component is joined to another component at the interface portion (column 11, line 52 – column 12, line 10; Figs 8A-8D). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Powers by reading the non-interfaced version of the geometry data as taught

by White. The suggestion/motivation for doing so would have been because transforming objects would increase efficiency (White, column 3, lines 4-6).

b. Referring to claim 4, Miodonski discloses wherein the 3D components comprise a set of components at least a first subset of which share substantially matching interfaced versions of interface portion geometry (Fig. 9; Fig. 17).

c. Referring to claim 5, Miodonski discloses wherein the set of 3D components comprises a second subset of components with matching interface geometry data, at least one component having two interface portions (column 16, lines 45-53; Fig. 9A). White discloses first and second versions of geometry matching the interface geometry (column 11, line 52 – column 12, line 10).

d. Referring to claim 6, Powers does not explicitly disclose wherein the map data includes plug data for closing an interface portion of the component or transforming the plug data. White discloses plug data for closing an interface portion (column 11, line 52 – column 12, line 10; Figs 8A-8D). Foley discloses transforming 3D geometry data using said component position data (page 280, paragraphs 1 and 2; Fig. 6.59).

e. Referring to claim 15, Powers discloses reading map data from a data store, the map data comprising component identifying data and component position data for said 3D components (column 27, lines 14-19; column 6, lines 5-7; Fig. 3B); reading component data for the identified components from a data store, the component data including 3D geometry data for components (column 27, lines 14-19; column 19; lines 63-67; column 20, lines 61-64; column 21, line 10 – column 22, line 45); and combining the transformed data to provide 3D virtual environment data for data for said 3D virtual

data (column 28, lines 7-9). White discloses creating plug data for a component with one or more interfaces (column 11, line 52 – column 12, line 10; Figs 8A-8D). Foley discloses transforming 3D geometry data using said component position data (page 280, paragraphs 1 and 2; Fig. 6.59).

f. Claim 18 is rejected with the rationale of the rejection of claim 3.

g. Claim 19 is rejected with the rationale of the rejection of claim 6.

h. Claim 22 is rejected with the rationale of the rejection of claim 15.

i. Claim 101 is rejected with the rationale of the rejection of claim 3.

j. Claim 102 is rejected with the rationale of the rejection of claim 4.

k. Claim 103 is rejected with the rationale of the rejection of claim 6.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Power in view of Foley further in view of Miodonski as applied to claim 8 further in view of U.S. Patent No. 6,014,145 to Bardon et al. (Bardon).

a. Referring to claim 10, Powers does not explicitly disclose including collision geometry data. Bardon discloses including collision geometry data (column 2, lines 51-54). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method Powers to include collision geometry data as taught by Bardon. The suggestion/motivation for doing so would have been because it would help the user stay focused and relate to the paths the user seeks to travel (Bardon, column 2, lines 10-20.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Powers in view of Foley further in view of Miodonski as applied to claim 8 further in view of Luebke et al., “Portals and Mirrors: Simple, Fast Evaluation of Potentially Visible Sets” (Luebke).

a. Referring to claim 12, Powers does not explicitly disclose a view portal associated with an interface portion of the component for determining portions of the 3D virtual environment to render for viewing, wherein said game-operation related includes portal data defining a said view portal and wherein a single portal is associated with a part of the 3D virtual environment deriving from joining the interface portions of two said components. Luebke discloses a view portal associated with an interface portion of the component for determining portions of the 3D virtual environment to render for viewing, wherein said game-operation related includes portal data defining a said view portal and wherein a single portal is associated with a part of the 3D virtual environment deriving from joining the interface portions of two said components (page 2, paragraphs 1 and 2; page 1, Fig. 2). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Powers by including view portals as taught by Luebke. The suggestion/motivation for doing so would have been because it would provide increased performance (Luebke, Abstract).

6. Claims 24, 25, 36, 107, and 108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Powers as applied to claims 23, 35, 106 in view of White.

a. Referring to claim 24, Powers does not explicitly disclose providing data for two versions of at least the interface portion of each building block, a first version in which the interface is closed and a second version in which the interface is open or selecting

from the first and second version of the block according to whether the block is to be joined to a neighboring block. White discloses providing data for two versions of at least the interface portion of each building block, a first version in which the interface is closed and a second version in which the interface is open or selecting from the first and second version of the block according to whether the block is to be joined to a neighboring block (column 11, line 52 – column 12, line 10; Figs 8A-8D). At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the method of Powers by creating a first and second version of the block and selecting according to whether the block is to be joined to a neighboring block as taught by White. The suggestion/motivation for doing so would have been because transforming objects would increase efficiency (White, column 3, lines 4-6).

b. Referring to claim 25, Powers does not explicitly disclose wherein the data for each building block includes visible geometry data for visible rendering of an internal space defined by the building block, wherein the first and second versions of the block interface data comprise first and second versions of said visible geometry and wherein said second versions of a plurality of the building block interface portions defined by the block interface data of a plurality of said blocks match to provide a susbstantially contiguous visible internal geometry where blocks are joined. White discloses wherein the data for each building block includes visible geometry data for visible rendering of an internal space defined by the building block, wherein the first and second versions of the block interface data comprise first and second versions of said visible geometry and wherein said second versions of a plurality of the building block interface portions

defined by the block interface data of a plurality of said blocks match to provide a susbstantially contiguous visible internal geometry where blocks are joined (column 11, line 52 – column 12, line 10; Figs 8A-8D).

c. Claim 36 is rejected per claim 35 with the rationale of the rejection of claim 24.

d. Claim 107 is rejected with the rationale of the rejection of claim 24.

e. Claim 108 is rejected with the rationale of the rejection of claim 25.

7. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Powers in view of White as applied to claim 25 further in view of Luebke.

a. Referring to claim 26, Powers does not explicitly disclose wherein the data for each block further comprises viewing portal data for use in determining portions of the 3D environment defined by the blocks which can be neglected when processing portions of the 3D environment for visible rendering. Luebke discloses wherein the data for each block further comprises viewing portal data for use in determining portions of the 3D environment defined by the blocks which can be neglected when processing portions of the 3D environment for visible rendering (page 2, paragraphs 1 and 2). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method of Powers by including viewing portal data as taught by Luebke. The suggestion/motivation for doing so would have been because it would provide increased performance (Luebke, Abstract).

8. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Powers in view of White as applied to claim 24 further in view of Luebke yet further in view of Bardon.

a. Referring to claim 27, Powers does not explicitly disclose wherein the data for each building block further includes collision geometry data defining geometry for use in determining collisions of the computer game character with features of the 3D virtual environment, and wherein the data for said first and second versions of at least the interface portion of each block defines first and second versions of said collision geometry. White discloses first and second versions of at least the interface portion (column 11, line 52 – column 12, line 10; Figs 8A-8D). Bardon discloses associating collision data with geometry for use in determining collisions (column 2, lines 51-57). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method Powers to include collision geometry data as taught by Bardon. The suggestion/motivation for doing so would have been because it would help the user stay focused and relate to the paths the user seeks to travel (Bardon, column 2, lines 10-20.

b. Referring to claim 28, Powers does not explicitly disclose wherein the data for each building block further includes visible geometry data and wherein, for the first, closed version of said interface portion of a block, the collision geometry is at least partially defined using said visible geometry data. Bardon discloses wherein the collision geometry is defined using said visible geometry data (column 2, lines 51-57; Fig. 3).

9. Claims 38-40, 42, 47, 48, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Powers in view of Foley further in view of Bardon.

a. Referring to claim 38, Powers disclose reading the map data (column 27, lines 14-19; column 6, lines 5-7; Fig. 3B). Powers does not explicitly disclose transforming the

visual geometry into world space or transforming the invisible control data. Foley discloses transforming data into world space (page 280, paragraphs 1 and 2; Fig. 6.59). Bardon discloses incorporating invisible control data (column 2, lines 51-57; Fig. 3). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method of Powers by transforming data into world space and incorporating invisible control data as taught by Foley and Bardon. The suggestion/motivation for doing so would have been because it would help the user stay focused and relate to the paths the user seeks to travel (Bardon, column 2, lines 10-20) and because it is natural to define an object in it own coordinate system and then transform it to a new world-coordinate system (Foley, page 223, paragraph 3).

b. Referring to claim 39, Bardon discloses wherein the invisible game control data comprises data selected from a group including collision geometry data, non-player character navigational data and viewing portal data (column 2, lines 51-57; Fig. 3).

c. Referring to claim 40, Powers discloses linking navigational data from different tiles (column 4, lines 7-10; column 25, line 59 – column 26, line 9). Foley discloses transforming data into world space (Foley, page 223, paragraph 3).

d. Referring to claim 42, Powers discloses wherein each tile has at least one interface portion for joining the tile to another tile and wherein said tile visual geometry data defines matching visual geometry for the interface portions of at least a subset of the tiles such that the geometry data defines substantially contiguous world geometry (column 9, lines 43-51; Figs. 3A and 4A). Foley discloses transforming data into world space (Foley, page 223, paragraph 3).

e. Referring to claim 47, Powers discloses inputting data for selecting tile data for said set of predetermined 3D tiles form tile data for a plurality of sets of 3D tiles, each tile within a set having tile data defining interface features for interfacing to the other tiles, the interface features of each tile substantially corresponding to interface features of at least one tile in each other set of 3D tiles (column 27, lines 42-54; Figs. 3A and 4A).

f. Claim 48 is rejected with the rationale of the rejection of claim 38. Claim 48 recites the additional limitations of a data memory storing component data and operable to store map data; and instruction memory storing processor implementable instructions and a processor operable to read and process data from the data memory. Powers discloses the aforementioned limitations (Figs. 1 and 2; column 8, line 56- column 9, line 9).

g. Claim 50 is rejected with the rationale of the rejection of claim 47.

10. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Powers in view of Foley in view of Bardon as applied to claim 39 further in view of Luebke.

a. Referring to claim 41, Powers does not explicitly disclose including portal data, further comprising matching portal data from different tiles, after transforming the portal data into said world space to remove duplicate portals. Luebke discloses matching portal from different cells (page 2, paragraphs 1 and 2). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method of Powers by including portals and matching portals as taught by Luebke. The suggestion/motivation for doing so would have been. The suggestion/motivation for

doing so would have been because it would provide increased performance (Luebke, Abstract).

11. Claims 43 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Powers in view of Foley further in view of Bardon as applied to claims 48 and 48 further in view of White.

a. Referring to claim 43, Powers does not explicitly disclose wherein the tile data includes plug visual geometry data whereby the tile data provides data defining at least two versions of visual geometry for each tile, a first version in which an interface to the tile is closed by a visual plug defined by the plug visual geometry data and a second version in which an interface to the tile is open for joining the tile to another tile. White disclose includes plug visual geometry data whereby the object data provides data defining at least two versions of visual geometry for each object, a first version in which an interface to the object is closed by a visual plug defined by the plug visual geometry data and a second version in which an interface to the object is open for joining the object to another object (column 11, line 52 – column 12, line 10). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Powers by defining two versions of geometry and including plug data as taught by White. The suggestion/motivation for doing so would have been because transforming objects would increase efficiency (White, column 3, lines 4-6).

b. Claim 49 is rejected with the rationale of rejection of claim 43.

12. Claims 44 and 45 rejected under 35 U.S.C. 103(a) as being unpatentable over Powers in view of Foley further in view of Bardon as applied to claim 38 further in view of Miodonski.

a. Referring to claim 44, Powers discloses, representing the three-dimensional world as a series of two dimensional levels on which the three-dimensional tiles may be place and receiving data for generating said map data from said user interface (column 9, lines 52-62). Powers does not explicitly disclose a user interface. Miodonski discloses a user interface (Fig. 10A). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the invention of Powers by including a user interface as taught by Miodonski. The suggestion/motivation for doing so would have been because large, unbounded 3D environments are difficult to navigate (Miodonski, column 1, lines 55-61).

b. Referring to claim 45, Powers discloses wherein said tile data includes data for one or more tiles spanning at least two of the two dimensional levels, whereby two of the two dimensional levels are linkable (column 12, lines 19-23; Fig. 4D).

13. Claims 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Powers in view of Foley further in view of Bardon further in view of Miodonski as applied to claim 44 yet further in view of "Tomb Raider Level Editor" (Tomb Raider).

a. Referring to claim 46, Powers does not explicitly disclose an indicator for providing the user with an indication of the memory requirements of the world data for a three-dimensional world constructed using the map. Tomb Raider discloses an indicator for providing the user with an indication of the memory requirements of the world data for a three-dimensional world constructed using the map (page 111, Window Info Box.). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method Powers by including an indicator of the memory

requirements as taught by Tomb Raider. The suggestion/motivation for doing so would have been because it would allow the user to determine how many object can be placed in the map.

14. Claims 53, 54, 56, 57, 63-65, 70, 81-85, 88-90, and 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miodonski as applied to 51, 77, and 87 in view of Tomb Raider.

a. Referring to claim 46, Miodonski does not explicitly displaying an approximate memory requirement. Tomb Raider discloses displaying an approximate memory requirement (page 111, Window Info Box.). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method Powers by displaying an approximation of memory requirements as taught by Tomb Raider. The suggestion/motivation for doing so would have been because it would allow the user to determine how many objects can be placed in the map.

b. Referring to claim 54, Miodonski does not explicitly disclose displaying an approximate difference between said estimated memory requirements for the 3D virtual environment and a maximum available memory space. Tomb Raider discloses displaying an approximate indication of memory requirements including a maximum available (page 111, Window Info Box). It would have been obvious at the time the invention was made to display the difference between said estimated memory requirements, Official Notice taken. The suggestion/motivation for doing so would have been to provide the user an indication of the amount of memory left.

c. Referring to claim 56, Miodonski does not explicitly disclose inputting lighting instructions from the user; and storing lighting data corresponding to said lighting instructions on said storage medium in association with said structure data. Tomb Raider discloses disclose inputting lighting instructions from the user (page 14); and storing lighting data corresponding to said lighting instructions on said storage medium in association with said structure data (page 9, paragraph 4). At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the method of Miodonski by inputting and storing lighting instructions as taught by Tomb Raider. The suggestion/motivation for doing so would have been because it would allow the user to provide lighting for the environment.

d. Referring to claim 57, Miodonski does not explicitly disclose include lighting phase instructions for setting a phase of a lighting intensity variation and wherein said lighting data includes lighting phase data corresponding to said lighting phase instructions. Tomb Raider discloses include lighting phase instructions for setting a phase of a lighting intensity variation and wherein said lighting data includes lighting phase data corresponding to said lighting phase instructions (page 16, paragraph 4). At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the method of Miodonski by inputting lighting phase instructions as taught by Tomb Raider. The suggestion/motivation for doing so would have been because it would allow the user to provide lighting effects for the environment.

b. Referring to claim 63, Miodonski discloses a selection component for the user to select a said predetermined constructional element (Figs. 9A and 21); a placing

component for the user to place the selected element in relation to other placed components (Fig. 21). Miodonski does not explicitly disclose a joining component to join the placed elements to provide a representation of the 3D virtual environment. Tomb Raider discloses a joining component to join the placed elements to provide a representation of the 3D virtual environment (page 23, Multiple Square Slopes section). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method Powers by including a joining component as taught by Tomb Raider. The suggestion/motivation for doing so would have been because it would allow the user to create more complex structures for the map.

b. Referring to claim 64, Miodonski discloses a display component to display the representation of the 3D virtual environment (Fig. 9A; Fig 17).

c. Referring to claim 65, Miodonski discloses the display component comprises a 2D display component to display a 2D representation of the 3D virtual environment (Fig. 9A).

d. Referring to claim 70, Miodonski discloses wherein associated with each said constructional element is a plurality of 3D tiles, each tile belonging to a respective tileset, the tiles within each tileset having a common visual stylistic appearance, the user interface further comprising a tileset selection component for the user to select a tileset for use with said constructional elements for constructing a 3D representation of said 3D virtual environment (Figs. 9A and Fig. 8B; column 15, lines 26-35).

e. Referring to claim 81, Miodonski does not explicitly disclose lighting placement data for use in determining the placement of lighting within the virtual 3D environment.

Tomb Raider discloses lighting placement data for use in determining the placement of lighting within the virtual 3D environment (page 14).

f. Referring to claim 82, Miodonski does not explicitly disclose lighting data includes lighting phase data for setting a phase of a light intensity variation in the virtual 3D environment. Tomb Raider discloses lighting data includes lighting phase data for setting a phase of a light intensity variation in the virtual 3D environment (page 16, paragraph 4).

g. Referring to claim 83, Miodonski does not explicitly disclose wherein the virtual 3D environment is for a computer game. Tomb Raider discloses wherein the virtual 3D environment is for a computer game (page 2, first paragraph).

h. Referring to claim 88, Miodonski discloses data for a plurality of said sets of constructional elements (Fig. 9A). Miodonski does not explicitly disclose each element having a connectivity determining to which other elements the element may be interfaced, the connectivity of an element being determined by said geometry data, each constructional element in a said set having a counterpart in each of the other sets, the connectivity of each said element substantially corresponding to the connectivity of the counterparts of the element. Tomb Raider discloses each element having a connectivity determining to which other elements the element may be interfaced, the connectivity of an element being determined by said geometry data, each constructional element in a said set having a counterpart in each of the other sets, the connectivity of each said element substantially corresponding to the connectivity of the counterparts of the element (page 30).

i. Referring to claim 89, Miodonski discloses wherein the geometry data for the interface portions of the constructional elements of one set is configured to define geometry to substantially match geometry of the interface portions of the elements of another data set (Fig. 9A).

j. Referring to claim 90, Miodonski does not explicitly disclose texture data for constructional elements for providing a visual appearance for said 3D surface element, each constructional element in a said set having texture data for a themed visual appearance different to the themed visual appearance of another said set of elements. Tomb Raider texture data for constructional elements for providing a visual appearance for said 3D surface element, each constructional element in a said set having texture data for a themed visual appearance different to the themed visual appearance of another said set of elements (page 12, Applying Texture section).

k. Referring to claim 92, Miodonski does not explicitly disclose wherein the virtual 3D environment comprises an environment for a computer game and wherein said bounding surface encloses a space within which the game is played. Tomb Raider discloses wherein the virtual 3D environment comprises an environment for a computer game and wherein said bounding surface encloses a space within which the game is played (page 2, paragraph 1; page 6, Figure).

15. Claims 93 and 94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miodonski in view of Tomb Raider as applied to claim 92 further in view of Luebke.

a. Referring to claim 93, Miodonski does not explicitly disclose portal data defining one or more portals for use by computer game code in determining which parts of the

virtual 3D environment to process for potential display. Luebke discloses portal data defining one or more portals for use by computer game code in determining which parts of the virtual 3D environment to process for potential display (page 2, paragraphs 1 and 2). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method of Miodonski by including portals as taught by Luebke. The suggestion/motivation for doing so would have been. The suggestion/motivation for doing so would have been because it would provide increased performance (Luebke, Abstract).

b. Referring to claim 94, Miodonski discloses wherein each said constructional element has an interface portion for interfacing the element to other said constructional elements (Fig. 9A). Miodonski does not explicitly disclose wherein a portal is associated with said interface portion. Luebke discloses wherein a portal is associated with said interface portion (page 2, paragraphs 1 and 2).

16. Claims 66-69, 71-76, 91, and 95 rejected under 35 U.S.C. 103(a) as being unpatentable over Miodonski in view of Tomb Raider as applied to claims 63, 88, and 92 are further in view of Powers.

a. Referring to claim 66, Miodonski does not explicitly disclose wherein the 2D representation comprises a plurality of 2D grids representing sections through the 3D virtual environment, and wherein the display component includes a selection component for the user to select a said section. Powers discloses disclose wherein the 2D representation comprises a plurality of 2D grids representing sections through the 3D virtual environment, and wherein the display component includes a selection component

for the user to select a said section (column 9, lines 51-62). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method of Miodonski by including a plurality of 2D grids representing sections through the 3D virtual environment as taught by Powers. The suggestion/motivation for doing so would have been because it would provide a simple, efficient and versatile system for modeling 3D environments (Powers, column 4, lines 42-46).

b. Referring to claim 67, Miodonski does not explicitly disclose wherein said sections represent substantially horizontal levels within the 3D virtual environment and wherein at least one said predetermined constructional element spans two or more levels, whereby the horizontal levels are linkable. Powers discloses wherein said sections represent substantially horizontal levels within the 3D virtual environment and wherein at least one said predetermined constructional element spans two or more levels, whereby the horizontal levels are linkable (column 9, lines 51-62; column 12, lines 19-23; Fig. 4D).

c. Referring to claim 68, Miodonski discloses wherein the display component comprises a 3D display component to display a 3D representation of the 3D visual environment (Figs. 9A and 17).

d. Referring to claim 69, Miodonski discloses wherein each element defines a closed 3D space (Figs. 9A and 17). Miodonski does not explicitly disclose wherein the joining component opens interfaces between joined elements. Tomb Raider discloses wherein the joining component opens interfaces between joined elements (page 23, Multiple Square Slopes section).

e. Referring to claim 71, Miodonski does not explicitly disclose a memory indicator component to provide an indication of a computer memory requirement of the 3D virtual environment. Tomb Raider discloses a memory indicator component to provide an indication of a computer memory requirement of the 3D virtual environment (page 111, paragraph 7).

f. Referring to claim 72, Miodonski discloses a map save component to save map data representing the map on a storage device, the map data comprising identification data and position data (Fig. 27).

g. Claim 73 is rejected with the rationale of the rejection of claim 63. Miodonski does not explicitly disclose an instruction memory, processor, or a data memory. Powers discloses a data memory, a processor, or an instruction memory (Fig. 2B).

h. Referring to claim 74, Miodonski discloses a display component to display the representation of the 3D virtual environment the display component comprising a 3D display component to display a 3D representation of the 3D virtual environment (Fig. 9A).

i. Referring to claim 75, Miodonski does not explicitly disclose a memory indicator component to provide an indication of a computer memory requirement of the 3D virtual environment. Tomb Raider discloses disclose a memory indicator component to provide an indication of a computer memory requirement of the 3D virtual environment (page 111, paragraph 7).

j. Referring to claim 76, Miodonski discloses computer readable instructions for controlling a computer system to provide the user interface of claim 68 (column 34, lines 49-53).

k. Referring to claim 91, Miodonski does not explicitly disclose wherein the 3D geometry defined by 3D geometry data of a constructional element in one said set differs from the 3D geometry of the counterpart to the element in another said set. Powers discloses wherein the 3D geometry defined by 3D geometry data of a constructional element in one said set differs from the 3D geometry of the counterpart to the element in another said set (column 21, line 10 – column 22, line 45).

l. Referring to claim 95, Miodonski does not explicitly disclose wherein the data for the 3D constructional element further comprises navigation data for use by computer game code in determining a route through a part of the virtual 3D environment constructed using the 3D constructional element. Power discloses navigation data for use in determining a route through a part of the virtual 3D environment constructed using the 3D constructional element (column 4, lines 7-10; column 25, line 59 – column 26, line 9).

17. Claim 96 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miodonski in view of Tomb Raider as applied to claim 92 further in view of Bardon.

a. Referring to claim 96, Miodonski does not explicitly disclose wherein 3D geometry data includes collision geometry data for use by computer game code in determining collisions with pars of said 3D virtual environment. Bardon discloses geometry data includes collision geometry data for use by computer game code in determining collisions with pars of said 3D virtual environment (column 2, lines 51-57).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method Miodonski to include collision geometry data as taught by Bardon. The suggestion/motivation for doing so would have been because it would help the user stay focused and relate to the paths the user seeks to travel (Bardon, column 2, lines 10-20.

18. Claims 58 and 61 rejected under 35 U.S.C. 103(a) as being unpatentable over Miodonski as applied to claim 51 in view of Powers.

a. Referring to claim 58, Miodonski does not explicitly disclose including constructional element identification data and constructional element position data for a plurality of elements, specifying positions of said predetermined constructional elements in the structure. Powers discloses disclose including constructional element identification data and constructional element position data for a plurality of elements, specifying positions of said predetermined constructional elements in the structure (column 27, lines 14-19; column 6, lines 5-7; Fig. 3B). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method of Miodonski by including constructional element identification data and constructional element position data as taught by Powers. The suggestion/motivation for doing so would have been because it would provide a simple, efficient and versatile system for modeling 3D environments (Powers, column 4, lines 42-46).

b. Referring to claim 51, Miodonski discloses representing said 3D constructional elements to a user (Fig. 9A); inputting instructions from the user for assembling the elements into a structure in which the elements are connected at the interface, the

structure representing the virtual 3D environment (column 12, lines 55-59) representing the structure to the user (Fig. 9A and Fig. 17); and storing structure data representing the structure on a storage medium for constructing the virtual 3D environment (Fig. 1). Miodonski does not explicitly disclose a data memory, a processor, or an instruction memory. Powers discloses a data memory, a processor, or an instruction memory (Fig. 2B).

19. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miodonski in view of Powers as applied to claim 58 and 77 further in view of U.S. Patent No. 5,414,801 to Smith et al. (Smith).

a. Referring to claim 59, Miodonski does not explicitly disclose including connection data specifying connections between constructional elements in the structure. Smith discloses including connection data specifying connections between constructional elements in the structure (Fig. 6). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method of Miodonski by specifying connections between constructional elements in the structure as taught by Smith. The suggestion/motivation for doing so would have been because it would allow a user to efficiently move through a three-dimensional space (Smith, column 3, lines 55-57).

20. Claim 78 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miodonski as applied to claim 77 in view of Smith.

a. Referring to claim 78, Miodonski does not explicitly discloses connection data for each element, for determining whether the at least one interface connects to another element. Smith discloses connection data for each element, for determining whether the at least one interface connects to another element. (Fig. 6).

21. Claims 85 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miodonski as applied to claim 84 in view of White.

a. Referring to claim 85, Miodonski discloses wherein said constructional element has at least one interface portion for interfacing to another said constructional element for constructing said virtual 3D environment wherein the 3D surface defined by said geometry data has an edge at said interface portion, said edge defining an opening(Fig. 9A; Fig. 17). Miodonski does not explicitly disclose wherein 3D geometry data further includes plug geometry data defining a plug to close said opening for use when said interface portion does not interface to another said constructional element. While discloses wherein 3D geometry data further includes plug geometry data defining a plug to close said opening for use when said interface portion does not interface to another said constructional element (column 11, line 52 – column 12, line 10). At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the method of Miodonski by incorporating plug data as taught by White. The

suggestion/motivation for doing so would have been because transforming objects would increase efficiency (White, column 3, lines 4-6).

b. Claim 97 is rejected with the rationale of the rejection of claim 85.

22. Claim 98 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miodonski in view of White as applied to claim 97 further in view of Bardon.

a. Referring to claim 98, Miodonski does not explicitly disclose wherein plug geometry data defines both a visual geometry and a collision geometry of said 3D constructional element. White discloses plug defining a visual geometry (column 11, line 52 – column 12, line 10). Bardon discloses geometry data includes collision geometry (column 2, lines 51-57). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method Miodonski to include collision geometry data as taught by Bardon. The suggestion/motivation for doing so would have been because it would help the user stay focused and relate to the paths the user seeks to travel (Bardon, column 2, lines 10-20.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 23, 29-35, 37, 106, 109-112 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. Patent No. 6,362,817 to Powers et al (Powers).

a. Referring to claim 23, Powers discloses inputting position data defining a set of relative positions for the blocks (column 9, lines 43-63; Fig. 3A and 4A); and joining the interfaces of the blocks using said position data to generate a 3D virtual environment defined by a plurality of blocks (Fig. 4A; column 10, lines 32-40).

b. Referring to claim 29, Powers discloses linking navigation positions of joined blocks to facilitate navigation between blocks (column 4, lines 7-10; column 25, line 59 – column 26, line 9).

c. Referring to claim 30, Powers discloses retrieving said 3D internal geometry for each block; and using the 3D internal geometry data for the blocks to generate the 3D virtual environment (column 28, lines 7-9; column 27, lines 14-19; column 20, lines 61-64).

d. Referring to claim 31, Powers discloses inputting data identifying said specified set of building blocks (column 27, lines 42-49).

e. Referring to claim 32, Powers discloses wherein each visually different version of at least one of the types of building block has data defining at least one item position for use in placing an item with the 3D virtual environment, the item position having associated item position identifier data, the item positions in the different versions of the block having substantially the same item position identifier whereby an item for the identified item position can be positioned in the block whichever version of the type of building block is selected (column 9, lines 43-64; Fig. 3A).

f. Referring to claim 33, Powers discloses selecting a set of building block data for said plurality of building blocks form a plurality of sets of data for said building blocks (column 27, lines 42-49).

g. Referring to claim 34, Powers discloses wherein the data for each of said plurality of building blocks has a version for each of said sets of building blocks, and wherein the one or more interfaces of each version of a said building block are defined by the data as being located in substantially similar relative positions in each version of said building block (column 9, lines 43-64; Fig. 3A; column 27, lines 42-49).

h. Claim 35 is rejected with the rationale of the rejection of claim 23. Claim 35 recites the additional limitations of a data memory, and instruction memory and a processor. Powers discloses the aforementioned limitations (Fig. 2B, column 8, lines 56-66).

i. Claim 37 is rejected with the rationale of the rejection of claim 32.

j. Claim 106 is rejected with the rationale of the rejection of claim 23.

k. Claim 109 is rejected with the rationale of the rejection of claim 30.

l. Claim 110 is rejected with the rationale of the rejection of claim 31.

m. Claim 111 is rejected with the rationale of the rejection of claim 33.

n. Claim 112 is rejected with the rationale of the rejection of claim 34.

3. Claims 51, 52, 55, 60, 77, 79, 80, 84, 86, and 87 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Miodonski.

a. Referring to claim 51, Miodonski discloses representing said 3D constructional elements to a user (Fig. 9A); inputting instructions from the user for assembling the

elements into a structure in which the elements are connected at the interface, the structure representing the virtual 3D environment (column 12, lines 55-59) representing the structure to the user (Fig. 9A and Fig. 17); and storing structure data representing the structure on a storage medium for constructing the virtual 3D environment (Fig. 1).

b. Referring to claim 52, Miodonski discloses inputting set selection data for selecting a said set of elements (column 23, lines 61-65); and storing said set selection data on the storage medium in association with said structure data (Fig. 1); whereby data is provided specifying the construction of one of a set of said virtual 3D environments from the selected set of constructional elements (Fig. 9).

c. Referring to 55, Miodonski discloses inputting item placement instructions from the user (Fig. 21) and storing item placement data corresponding to said item placement instructions on said storage medium in association with said structure data (Fig. 24).

d. Referring to claim 60, Miodonski discloses representing said structure to the user as substantially 2D elements located on a grid, said 2D elements representing said 3D constructional elements (Fig. 9A).

e. Referring to claim 77, Miodonski discloses data for use in constructing a virtual 3D environment from predetermined constructional elements (Fig. 9A), each constructional element having at least one interface for connecting the element to another of said predetermined elements (Fig. 9A), the data structure defining an arrangement of said elements and comprising constructional element identification data and constructional element position data for each of a plurality of said elements (Figs. 3 and 19).

f. Referring to claim 79, Miodonski discloses a plurality of sets of elements, each set having corresponding interfaces (Figs. 8B and 9A, the data structure further comprising set data specifying a said set of elements for use in constructing the virtual 3D environment (Figs. 3 and 4).

g. Referring to claim 80, Miodonski discloses comprising object placement data for use in determining the placement of objects within the virtual 3D environment (Fig. 3).

h. Referring to claim 84, Miodonski discloses a 3D constructional element for use in constructing a virtual 3D environment, the data comprising 3D geometry data defining a 3D surface for use in defining a portion of a bounding surface of said virtual 3D environment, said 3D virtual environment being located with said bounding surface (Figs. 9A, 3, 4, and 17).

i. Referring to claim 86, Miodonski discloses wherein said 3D geometry data defines a 3D surface visible in said virtual 3D environment (Fig. 3A; Fig. 17).

j. Referring to claim 87, Miodonski discloses comprising a plurality of said 3D constructional elements forming a set of said constructional elements, each element within the set having at least one interface portion for interfacing to another element within the set for constructing said virtual 3D environment, said geometry data for an element defining the geometry of said interface portion of the element, the geometry of at least one interface portion of each constructional element in the set matching the geometry of an interface portion of each of the other constructional elements in the set (Fig. 9A, column 16, lines 37-65).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Linzy McCartney** whose telephone number is **(703) 605-0745**. The examiner can normally be reached on Mon-Friday (8:00AM-5: 30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Mark Zimmerman**, can be reached at **(703) 305-9798**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

ltm
20 December 2003

RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600